

AMENDMENTS TO THE SPECIFICATION

Please amend the paragraph beginning on page 11, line 15 (under the subheading "EXAMPLE 3") and ending on page 12, line 26 as follows:

-- Interdigitated copper-grid electrodes were electroplated with gold on the surface of a 125 μm thick kapton film. FIG. 4 shows a top view in schematic form of a system 400 in accordance with the invention having interdigitated electrodes 410. FIG. 5 shows a cross-section section 455 of system 400, indicated by lines 5 in FIG. 4. As depicted in FIGS. 4-5, a first portion of kapton film surface 404 of kapton film 402 was covered with first electrode stem 419 and corresponding first electrodes 420. A second portion of kapton film surface 404 was covered with second electrode stem 421 and corresponding second electrodes 422. A third portion 426 of the electrically nonconductive kapton film surface 404 was not covered with electrode material. Adjacent "fingers" of interdigitated electrodes 410, functioning alternately as anodes 420 and cathodes 422, were separated by interelectrode spaces 426. Interdigitated electrodes 410 each had a width of about 50 μm ; a thickness of the metal electrodes was approximately 2 μm . Interelectrode spaces 426 each had a width of about 50 μm . The resulting grid of interdigitated electrodes 410 and interelectrode spaces 426 covered an area on surface 404 of approximately 5 cm x 5 cm. A DC power source providing a voltage bias of 5 volts was attached to the anodes and cathodes. Kapton film 402, containing electrodes 410 and interelectrode spaces 426, was covered with about 1 mm of water. As depicted in FIG. 5, water film 460 covered kapton film 402 and interdigitated electrodes 410 and filled interelectrode spaces 426. A voltage of 5 volts was applied, and then the system was cooled to -10° C. A current density of about 1 mA/cm² was measured in the water between selected anodes and cathodes. As long as the voltage was continuously applied, a liquid water layer 462 directly adjacent to the electrodes 410 did not freeze, while an upper ice layer 464 of water film 460 (~~designated by the hatching in FIG. 5~~) formed as a result of the freezing temperature. The unfrozen liquid water layer 462 had a thickness estimated optically as 5 to 25 μm . The temperature of the substrate film 402 and the ice 464 above the electrodes 410, as measured with the thin thermocouples, was maintained at -10 °C. A simple calculation showed that the low electric power density of $\leq 0.5 \text{ mW/cm}^2$ could have warmed the liquid bulk of liquid water layer 462 by only about 0.05 °C above ambient temperature by resistive heating. Power was turned "off", resulting in complete

freezing of liquid water layer 462. After freezing occurred, a voltage bias was applied to the electrodes again, but at a higher voltage in order to provide the same electric power as before freezing (the electrical conductivity of the ice is less than liquid water, so a higher voltage is required in the ice to provide the same power as in water). The application of the same electric power to the ice that had prevented freezing of water in liquid water layer 462, however, did not cause melting of the layer of ice. This indicates that the voltage applied to the electrodes in the liquid water system prevented ice formation in accordance with the invention, but the same electric power was unable to melt ice through heating after the ice had formed. It should be noted that the thickness of $2\ \mu\text{m}$ of the metal electrodes in Example 3 was larger than necessary to provide sufficient electric current through the liquid water layer.--
